WHAT IS CLAIMED IS:

1. A method of displaying an image on a computer screen, the method comprising:

describing at least a portion of a base image as a path;

performing a non-affine transform on the path to produce a transformed path; and

rendering the transformed path onto the computer screen.

Sub A1

2. The method of claim 1 wherein performing a non-affine transform comprises performing a bilinear transform.

Sub B1

3. The method of claim 2 wherein describing the portion of the base image as a path comprises describing the portion using a function of order n.

4. The method of claim 3 wherein performing a bilinear transform produces a transformed function of order 2n.

5. The method of claim 3 wherein describing the portion of the base image as a path comprises describing the portion as a function of order one.

6. The method of claim 3 wherein describing the portion of the base image as a path comprises describing the portion as a function of order three.

7. The method of claim 1 wherein performing a non-affine transform comprises performing a perspective transform.

8. The method of claim 7 wherein performing a perspective transform produces a rational function of order n.

9. The method of claim 1 wherein rendering the transformed path comprises approximating the transformed path as a series of lines and rendering each line in the series of lines.

10. The method of claim 9 wherein producing a transformed path comprises producing a path of the form $\sum_{i=0}^{n} B_i^n(t)\mathbf{q}_i$ where t is between zero and one and wherein approximating the transformed path as a series of lines comprises:

converting the transformed path from a function that describes an entire curve to a function of the form $\sum_{j=0}^{n} B_j^n(t)\tilde{\mathbf{q}}_j$ that describes a segment of the curve by setting each $\tilde{\mathbf{q}}_j = \sum_{i=0}^{j} B_i^j(c)\mathbf{q}_i$ where c is a fixed fraction; and

determining if the segment of the curve can be replaced by a straight line based

on the function that describes the segment.

11. The method of claim 10 wherein approximating the transformed path as a series of lines further comprises:

converting a function of the form $\sum_{i=0}^{n} B_i^n(t)\mathbf{q}_i$ that describes a segment of the curve into a function of the form $\sum_{j=0}^{n} B_j^n(t)\tilde{\mathbf{q}}_j$ that describes a larger segment of the curve by setting each $\tilde{\mathbf{q}}_j = \sum_{i=0}^{j} B_i^j(d)\mathbf{q}_i$ where d is a fixed value that is greater than one; and

determining if the larger segment of the curve can be replaced by a straight line based on the function that describes the segment.

12. The method of claim 10 wherein approximating the transformed path as a series of lines further comprises:

converting a function of the form $\sum_{i=0}^{n} B_i^n(t)\mathbf{q}_i$ that describes a segment of the curve into a function of the form $\sum_{j=0}^{n} B_j^n(t)\tilde{\mathbf{q}}_j$

that describes a neighboring segment of the curve by setting each $\tilde{\mathbf{q}}_j = \sum_{i=n-j}^{n} (-1)^{n-i} \binom{j}{n-i} 2^{j-(n-i)} \mathbf{q}_i$; and

determining if the neighboring segment of the curve can be replaced by a straight line based on the function that describes the segment.

13. The method of claim 9 wherein producing a transformed path comprises producing a path of the form $\mathbf{r} = \sum_{i=0}^{n} \mathbf{a}_i t^i$ where t is between zero and one and wherein approximating the transformed path as a series of lines comprises:

converting the transformed path from a function that describes an entire curve to a function of the form $\sum_{j=0}^{n} \tilde{\boldsymbol{a}}_j t^j$ that describes a segment of the curve by setting each $\tilde{\boldsymbol{a}}_j = c^j \boldsymbol{a}_j$ where c is a fixed fraction; and

determining if the segment of the curve can be replaced by a straight line based on the function that describes the segment.

14. The method of claim 13 wherein approximating the transformed path as a series of lines further comprises:

converting a function of the form $\sum_{i=0}^{n} \mathbf{a}_i t^i$ that describes a segment of the curve into a function of the form $\sum_{j=0}^{n} \tilde{\boldsymbol{a}}_j t^j$ that describes a larger segment of the curve by setting each $\tilde{\boldsymbol{a}}_j = d^j \boldsymbol{a}_j$ where d is a fixed value that is greater than one; and

determining if the larger segment of the curve can be replaced by a straight line based on the function that describes the segment.

15. The method of claim 13 wherein approximating the transformed path as a series of lines further comprises:

converting a function of the form $\sum_{i=0}^{n} \boldsymbol{a}_i t^i$ that describes a segment of the curve into a function of the form $\sum_{j=0}^{n} \tilde{\boldsymbol{a}}_j t^j$ that describes a neighboring segment of the curve by setting each $\tilde{\boldsymbol{a}}_j = \sum_{i=j}^{n} \frac{i!}{j!(i-j)!} \boldsymbol{a}_i$; and

determining if the neighboring segment of the curve can be replaced by a straight line based on the function that describes the segment.

16. The method of claim 1 wherein performing a non-affine transform and rendering the transformed path comprise:

issuing a call to a server process while passing parameters comprising the path of the base image and a type of non-affine transform; and

processing the call in the server process by performing the transform and rendering the transformed path.

17. The method of claim 16 wherein issuing a call to a server process further comprises passing parameters further comprising corner points for a quadrilateral that defines a transform space.

18. The method of claim 17 wherein issuing a call to a server process further comprises passing parameters further comprising a pen style to be used during rendering.

19. The method of claim 17 wherein passing a path comprises passing a list of paths.

20. The method of claim 19 wherein issuing a call to a server process further comprises passing parameters further comprising a brush style for filling a space between at least two rendered transformed paths.

Sub A2

21. A computer-readable medium having computer-executable components for performing steps comprising:

generating a function to describe an image for a computer screen;

transforming the function using a non-affine transform to produce a transformed function; and

converting the transformed function into an image on the computer screen.

22. The computer-readable medium of claim 21 wherein transforming the function comprises transforming a function representing a smooth curve.

23. The computer-readable medium of claim 21 wherein transforming the function comprises using a bilinear transform.

24. The computer-readable medium of claim 23 wherein generating a function to describe an image comprises generating a function of order n and wherein transforming the function produces a transformed function of order 2n.

25. The computer-readable medium of claim 21 wherein transforming the function comprises using a perspective transform.

26. The computer-readable medium of claim 21 wherein converting the transformed function into an image comprises converting the transformed function into a series of lines and converting each line into an image.

27. The computer-readable medium of claim 26 wherein converting the transformed function into a series of lines comprises:

converting a function of the form $\sum_{i=0}^{n} \frac{n!}{i!\,(n-i)!} t^{i} (1-t)^{n-i} \mathbf{q}_{i}$ that describes a segment of a curve represented by the transform function into a function of the form $\sum_{j=0}^{n} \frac{n!}{j!\,(n-j)!} t^{j} (1-t)^{n-j} \tilde{\mathbf{q}}_{j}$ that describes a different sized segment of the curve by setting each $\tilde{\mathbf{q}}_{j} = \sum_{i=0}^{j} \frac{j!}{i!\,(j-i)!} c^{i} (1-c)^{j-i} \mathbf{q}_{i}$ where c is a fixed value; and

determining if the different sized segment of the curve can be replaced by a

straight line based on the function that describes the segment.

28. The computer-readable medium of claim 26 wherein converting the transformed function into a series of lines comprises:

converting a function of the form $\sum_{i=0}^{n} \frac{n!}{i!\,(n-i)!} t^i (1-t)^{n-i} \mathbf{q}_i$ that describes a segment of a curve represented by the transform function into a function of the form $\sum_{j=0}^{n} \frac{n!}{j!\,(n-j)!} t^j (1-t)^{n-j} \tilde{\mathbf{q}}_j$ that describes an adjoining segment of the curve by setting each $\tilde{\mathbf{q}}_j = \sum_{i=n-j}^{n} (-1)^{n-i} \binom{j}{n-i} 2^{j-(n-i)} \mathbf{q}_i$; and

determining if the adjoining segment of the curve can be replaced by a straight line based on the function that describes the segment.

29. The computer-readable medium of claim 26 wherein converting the transformed function into a series of lines comprises:

converting a function of the form $\sum_{i=0}^{n} \mathbf{a}_i t^i$ that describes a segment of a curve represented by the transform function

into a function of the form $\sum_{j=0}^{n} \tilde{\boldsymbol{a}}_j t^j$ that describes a different sized segment of the curve by setting each $\tilde{\boldsymbol{a}}_j = c^j \boldsymbol{a}_j$ where c is a fixed value; and

determining if the different sized segment of the curve can be replaced by a straight line based on the function that describes the segment.

30. The computer-readable medium of claim 26 wherein converting the transformed function into a series of lines comprises:

converting a function of the form $\sum_{i=0}^{n} \boldsymbol{a}_i t^i$ that describes a segment of a curve represented by the transform function into a function of the form $\sum_{j=0}^{n} \tilde{\boldsymbol{a}}_j t^j$ that describes an adjoining segment of the curve by setting each $\tilde{\boldsymbol{a}}_j = \sum_{i=j}^{n} \frac{i!}{j!(i-j)!} \boldsymbol{a}_i$; and

determining if the adjoining segment of the curve can be replaced by a straight line based on the function that describes the segment.

31. A method for rendering a curve on a computer screen comprising:

converting a function of the form $\sum_{i=0}^{n} \frac{n!}{i!\,(n-i)!} t^{i}(1-t)^{n-i}\mathbf{q}_i$ that describes a segment of the curve into a function of the form $\sum_{j=0}^{n} \frac{n!}{j!\,(n-j)!} t^{j}(1-t)^{n-j}\tilde{\mathbf{q}}_j$ that describes a different sized segment of the curve by setting each $\tilde{\mathbf{q}}_j = \sum_{i=0}^{j} \frac{j!}{i!\,(j-i)!} c^{i}(1-c)^{j-i}\mathbf{q}_i$ where c is a fixed value that determines the segment size;

determining if the different sized segment of the curve can be replaced by a straight line based on the function that describes the segment; and

rendering the straight line onto the computer screen if the straight line replaced the segment.

32. A method for rendering a curve on a computer screen comprising:

converting a function of the form $\sum_{i=0}^{n} \frac{n!}{i!\,(n-i)!} t^{i}(1-t)^{n-i}\mathbf{q}_i$ that describes a segment of the curve into a function

of the form $\sum_{j=0}^{n} \frac{n!}{j!\,(n-j)!} t^j (1-t)^{n-j} \tilde{\mathbf{q}}_j$ that describes an adjacent segment of the curve by setting each $\tilde{\mathbf{q}}_j = \sum_{i=n-j}^{n} (-1)^{n-i} \binom{j}{n-i} 2^{j-(n-i)} \mathbf{q}_i$;

determining if the adjacent segment of the curve can be replaced by a straight line based on the function that describes the segment; and

rendering the straight line onto the computer screen if the straight line replaced the segment.

33. A method for rendering a curve on a computer screen comprising:

converting a function of the form $\sum_{i=0}^{n} \mathbf{a}_i t^i$ that describes a segment of the curve into a function of the form $\sum_{j=0}^{n} \tilde{\boldsymbol{a}}_j t^j$ that describes a different sized segment of the curve by setting each $\tilde{\boldsymbol{a}}_j = c^j \boldsymbol{a}_j$ where c is a fixed value that determines the segment size;

determining if the different sized segment of the curve can be replaced by a straight line based on the function that describes the segment; and

rendering the straight line onto the computer screen if the straight line replaced the segment.

34. A method for rendering a curve on a computer screen comprising:

converting a function of the form $\sum_{i=0}^{n} \boldsymbol{a}_i t^i$ that describes a segment of the curve into a function of the form $\sum_{j=0}^{n} \widetilde{\boldsymbol{a}}_j t^j$ that describes an adjacent segment of the curve by setting each $\widetilde{\boldsymbol{a}}_j = \sum_{i=j}^{n} \frac{i!}{j!(i-j)!} \boldsymbol{a}_i$;

determining if the adjacent segment of the curve can be replaced by a straight line based on the function that describes the segment; and

rendering the straight line onto the computer screen if the straight line replaced the segment.

35. A computer-readable medium having computer-executable components for performing steps comprising:

converting a function of the form $\sum_{i=0}^{n} \frac{n!}{i!(n-i)!} t^i (1-t)^{n-i} \mathbf{q}_i$ that describes a segment of the curve into a function

of the form $\sum_{j=0}^{n} \frac{n!}{j!\,(n-j)!} t^{j}(1-t)^{n-j}\tilde{\mathbf{q}}_j$ that describes a different sized segment of the curve by setting each $\tilde{\mathbf{q}}_j = \sum_{i=0}^{j} \frac{j!}{i!\,(j-i)!} c^{i}(1-c)^{j-i}\mathbf{q}_i$ where c is a fixed value that determines the segment size;

determining if the different sized segment of the curve can be replaced by a straight line based on the function that describes the segment; and

rendering the straight line onto the computer screen if the straight line replaced the segment.

36. A computer-readable medium having computer-executable components for performing steps comprising:

converting a function of the form $\sum_{i=0}^{n} \frac{n!}{i!\,(n-i)!} t^{i}(1-t)^{n-i}\mathbf{q}_i$ that describes a segment of the curve into a function of the form $\sum_{j=0}^{n} \frac{n!}{j!\,(n-j)!} t^{j}(1-t)^{n-j}\tilde{\mathbf{q}}_j$ that describes an adjacent segment of the curve by setting each $\tilde{\mathbf{q}}_j = \sum_{i=n-j}^{n} (-1)^{n-i}\binom{j}{n-i} 2^{j-(n-i)}\mathbf{q}_i$;

determining if the adjacent segment of the curve can be replaced by a straight line based on the function that describes the segment; and

rendering the straight line onto the computer screen if the straight line replaced the segment.

37. A computer-readable medium having computer-executable components for performing steps comprising:

converting a function of the form $\sum_{i=0}^{n} \mathbf{a}_i t^i$ that describes a segment of the curve into a function of the form $\sum_{j=0}^{n} \tilde{\boldsymbol{a}}_j t^j$ that describes a different sized segment of the curve by setting each $\tilde{\boldsymbol{a}}_j = c^j \boldsymbol{a}_j$ where c is a fixed value that determines the segment size;

determining if the different sized segment of the curve can be replaced by a straight line based on the function that describes the segment; and

rendering the straight line onto the computer screen if the straight line replaced the segment.

38. A computer-readable medium having computer-executable components for performing steps comprising:

converting a function of the form $\sum_{i=0}^{n} a_i t^i$ that describes a segment of the curve into a function of the form $\sum_{j=0}^{n} \tilde{a}_j t^j$ that describes an adjacent segment of the curve by setting each $\tilde{a}_j = \sum_{i=j}^{n} \frac{i!}{j!(i-j)!} a_i$;

determining if the adjacent segment of the curve can be replaced by a straight line based on the function that describes the segment; and

rendering the straight line onto the computer screen if the straight line replaced the segment.